WWF

REPORT

2018

PULSE OF THE FOREST

THE STATE OF THE GREATER MEKONG'S FORESTS AND THE EVERYDAY PEOPLE WORKING TO PROTECT THEM

FOREWORD

The Greater Mekong, which encompasses the countries of Cambodia, Laos, Myanmar, Thailand and Vietnam, is one of the few places on Earth where the links between human and ecosystem connectivity are so vital. A new species is discovered every two days on average in the region, and its forests are teeming with life – from tigers and elephants to saolas, one of the world's rarest large mammals.

Like many other regions of the world, the Greater Mekong is at a crossroads. The economies in the region are booming, and this brings the challenging task of balancing legitimate needs for economic development while safeguarding forest ecosystems and the ecosystem services they provide.

Deforestation is a major threat both to ecosystems and local economies. The Greater Mekong was the world's most densely forested area in the 1970s but has now lost a third of its tree cover. It is on course to lose another third between 2010 and 2030 if current trends continue.

If we want to retain the Greater Mekong's rich biodiversity, urgent action is needed from all stakeholders – businesses, governments, communities and civil society. This Pulse of the Forest report highlights the state of the Greater Mekong forests, and solutions that are already being implemented and showing results, demonstrating that positive change is possible when all stakeholders come together for a common cause. From the woodlands of the Central Annamites to villages in Myanmar, the stories featured in this report show how people are bucking the deforestation trend to bring their forests back to life.

The solutions are there. We need to look outside the box and not be afraid to take risks, and above all, we need to come together to scale up these solutions and empower those best positioned to protect forests, local communities. Only by working together across sectors can we save the forests for the future, before it's too late.

-Alistair Monument

WWF Global Forest Practice Leader

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The destruction the region's wilderness areas are facing appears overwhelming - but every day, people across the Greater Mekong are proving a brighter future is possible.

In the thriving wilderness along Cambodia's eastern border, Han Sakhan witnessed the destruction as illegal loggers and poachers ran rampant in the forests around him. In Vietnam, Nguyen Huu Hoa, a "forest invader" who cut rattan in a protected area, grew alarmed at the toll this took and the impact on wildlife. And in Myanmar, Hey Mer watched in despair as the forests surrounding her village fell to agricultural expansion.

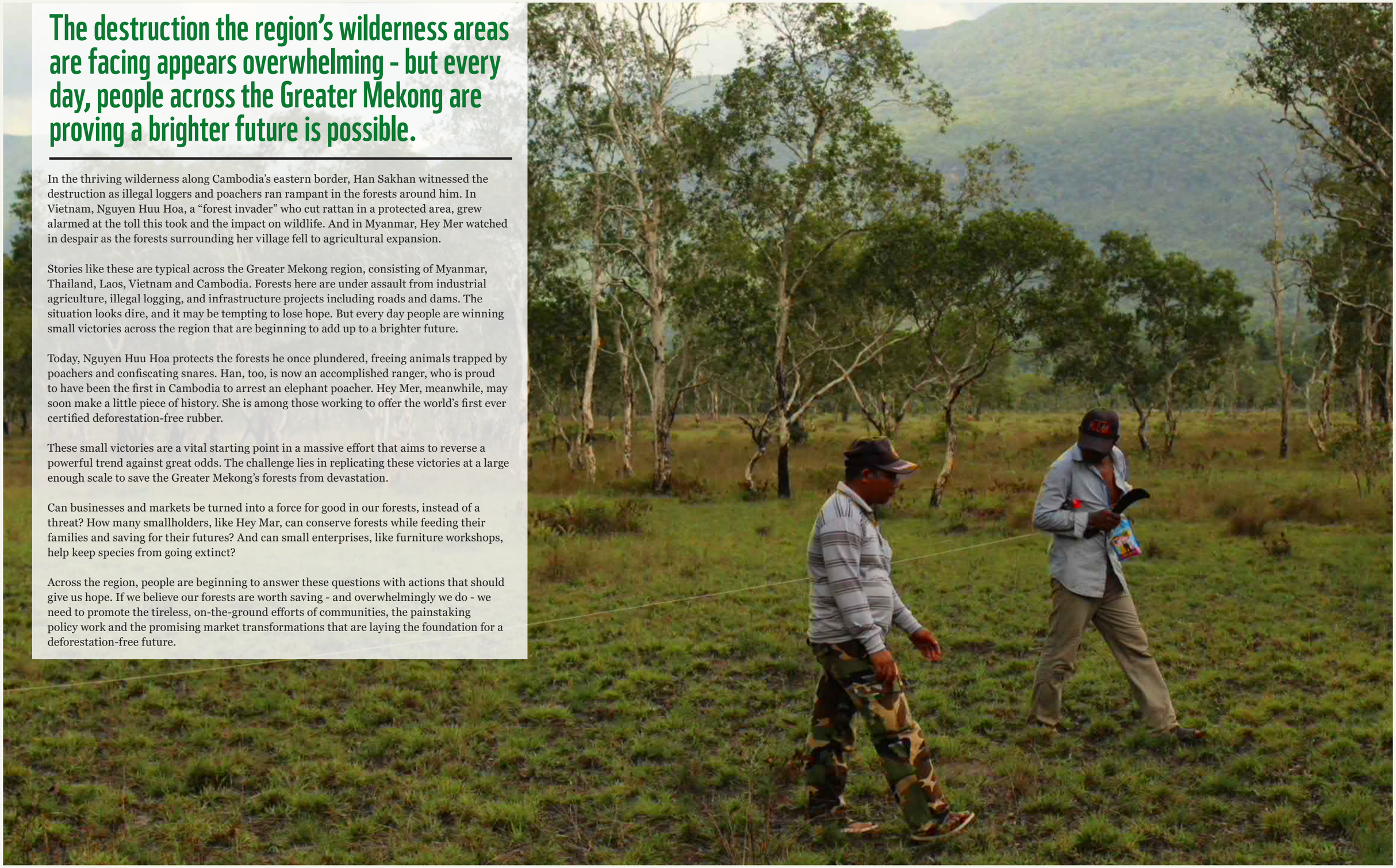
Stories like these are typical across the Greater Mekong region, consisting of Myanmar, Thailand, Laos, Vietnam and Cambodia. Forests here are under assault from industrial agriculture, illegal logging, and infrastructure projects including roads and dams. The situation looks dire, and it may be tempting to lose hope. But every day people are winning small victories across the region that are beginning to add up to a brighter future.

Today, Nguyen Huu Hoa protects the forests he once plundered, freeing animals trapped by poachers and confiscating snares. Han, too, is now an accomplished ranger, who is proud to have been the first in Cambodia to arrest an elephant poacher. Hey Mer, meanwhile, may soon make a little piece of history. She is among those working to offer the world's first ever certified deforestation-free rubber.

These small victories are a vital starting point in a massive effort that aims to reverse a powerful trend against great odds. The challenge lies in replicating these victories at a large enough scale to save the Greater Mekong's forests from devastation.

Can businesses and markets be turned into a force for good in our forests, instead of a threat? How many smallholders, like Hey Mar, can conserve forests while feeding their families and saving for their futures? And can small enterprises, like furniture workshops, help keep species from going extinct?

Across the region, people are beginning to answer these questions with actions that should give us hope. If we believe our forests are worth saving - and overwhelmingly we do - we need to promote the tireless, on-the-ground efforts of communities, the painstaking policy work and the promising market transformations that are laying the foundation for a deforestation-free future.

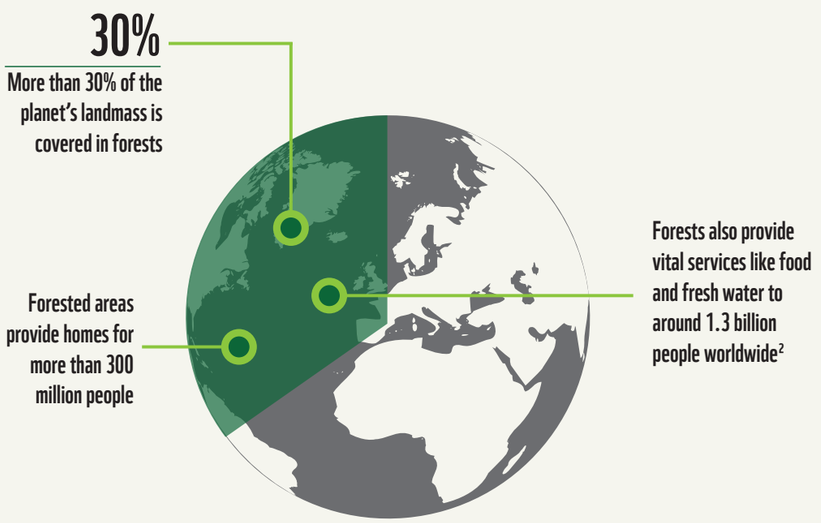


WHY OUR FORESTS ARE VITAL

The task is extremely urgent. From the humid jungle thickets of the Amazon, to the frigid, boreal wilderness of Russia and the unique dry forests of Cambodia's Eastern Plains, vast tracts of pristine canopy are being cleared or ruined at an alarming rate.

Each year, around 7.6 million hectares of forests[1] that shelter and nourish complex meshes of life are lost or severely degraded. That's an area twice the size of Paris lost every day. Forests are reduced to flat expanses of dirt to make way for plantations. They are sliced up by roads that lure people deeper into the wilderness to fell even more trees. And they are looted for timber and wildlife, leaving areas barren.

The main cause of forest loss globally is industrial farming, but unsustainable logging, settlement expansion and infrastructure projects also play a major role. By 2030, we could lose up to another 170 million hectares, an area of forest more than three times the size of France.[2]



With satellite images and aerial photographs, we can see the destruction almost in real time. But the damage goes much deeper than scars on the landscape. Forests aren't just physical masses; they are intricate living entities whose existence is intertwined with ours in ways we don't yet fully understand. When these sophisticated systems are injured or destroyed, it has profound consequences for human life.

As habitats are obliterated, it is not only a mesmerising array of forest-dwelling life - like Bornean orangutans, Sumatran elephants and enigmatic, spindle-horned saolas - that we stand to lose. There is more at stake even than the billions of tonnes of greenhouse gasses set to be released into the atmosphere by felled trees. Deforestation also threatens human health, emotional wellbeing, culture, heritage and livelihoods in a multitude of ways.

More than 30% of the planet's landmass is covered with forests, which provide a home to 300 million people and most land-dwelling plants and animals. Forests also provide vital services like food and fresh water to around 1.3 billion other people who don't live in them.

Forest-based products are worth $600 billion a year, or almost 1% of global GDP, but global markets have yet to come close to recognising the immense value of forests. A third of the world's largest cities pipe their drinking water from forested watersheds. This is a natural, cheap alternative to water treatment for billions of gallons flowing to places like New York, Mumbai and Bogota.[3]

The world's trees are also indispensable tools in the fight against climate change. Deforestation causes about 15% of greenhouse gases. But by 2030, more than 7 billion tonnes of carbon dioxide could be removed from the atmosphere by forests. That would be the same as taking 1.5 billion cars off the roads over the same period.[4]

At the local level too, forests protect people from the worst excesses of climate change. They help the earth to soak up excess rainwater, reducing the severity of floods. When conditions are dryer, they release water into the atmosphere.[5] In certain climates, areas that lose forest cover can quickly become barren, desert-like landscapes.

Human health is firmly entwined with the health of forests. In recent decades, the hunt for new medicines has seen a sharp increase in the number of researchers heading deep into jungles and woodlands in search of new genetic materials with healing properties. Half of the synthetic medicines we use today have natural precursors.[6] As our forests shrink, we risk destroying species that have yet to be discovered but could help us fight disease.

THE FIGHT TO SAVE FORESTS IS ON

THE GREATER MEKONG IS HOME TO THE LARGEST COMBINED TIGER HABITAT IN THE WORLD

Losing these vital ecosystem services would be a catastrophe. But it is not too late for every individual and every organisation to act. Communities do not need to wait for direction or policy changes from their governments. And governments needn't – and shouldn't – wait for global initiatives before they act.

Around the world, at the local and global level, people are taking the fight to save forests into their own hands. WWF is helping to drive this change by working with everyone from rubber tappers, acacia Smallholders and rattan harvesters to national governments and transnational companies. These stakeholders are ridding supply chains of unsustainable forest products, building forest-friendly livelihoods and creating and sustaining conservation areas.

More than 190 million hectares of forest in over 80 countries are now certified by the Forest Stewardship Council, which by 2020 aims to certify a fifth of global forest-based trade. And the amount of forests preserved as conservation areas is increasing too. Between 1990 and 2015, protected forests grew 50% in terms of land area.[7] While there is debate about how effective this protection is, progress like this shows that reversing the trends devastating earth's forests is possible. But we must act now.

THE GREATER MEKONG: A LAND OF ABUNDANCE AND LOSS

The Greater Mekong region is a major front in the battle against deforestation. It supports many of the world's most precious biological gems. Bulbous-headed Irrawaddy dolphins splash in the brackish waters of its river mouths; solitary sun bears roam its dense jungles feeding on termites, fruits and beehives; and a dazzling spectrum of brightly coloured reptiles and amphibians – from rainbow-headed snakes to other-worldly newts – populate its forests and wetlands. Since 1997, scientists have discovered more than 2,200 new vertebrate and vascular plant species in the region.

But the story of the region's biodiversity is one of tragic contradictions. No other continental region on the planet saw more large mammal and bird species go extinct in the 20th century. And while the area is home to the world's largest combined tiger habit, numbers of this majestic species have plummeted by 70% over the last 10 years or so. The Greater Mekong has become a hotspot for illegal wildlife trading. At the border town of Mong La in Myanmar, pieces of ivory, chunks of elephant skin, severed tiger paws, pangolin scales and even live wild cats are sold openly at a large outdoor market. Hotels in the town sell "tiger wine" - alcohol drawn from a tank that has the big cat's body parts floating inside. A similar sight can be seen in Laos, especially within the Golden Triangle region where Laos, Myanmar and Thailand intersect and where busloads of tourists from China come to shop, gamble and often consume or purchase endangered species.

Deforestation is a key driver of extinction, robbing animals of their habitats and making life ever easier for poachers. The region was the world's most densely forested area in the 1970s but has now lost a third of its tree cover, and is on course to lose another third between 2010 and 2030.[8] This means that this handful of countries could account for 17% - or 30 million hectares - of global deforestation by the end of the next decade without interventions to prevent losses.

WWF counts the region among 11 'Deforestation Fronts' – areas that in the coming decades could be responsible for up to 80% of the world's forest loss. This is why working with all stakeholders and investing in communities in this region, home to some 300 million people, offers one highly effective route to saving the world's forests.

STABLE FORESTS, STABLE CLIMATE

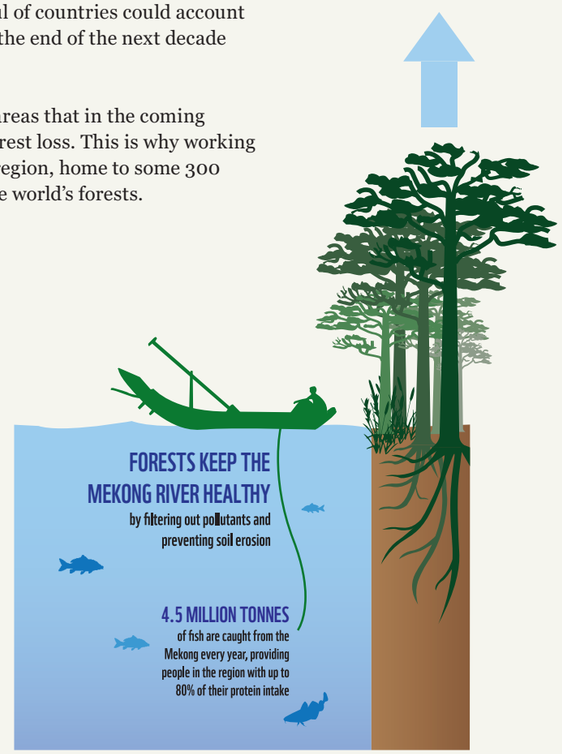
Forests help to create cloud coverage by releasing moisture into the air, protecting the surrounding land from drought

GREATER MEKONG CONTEXT

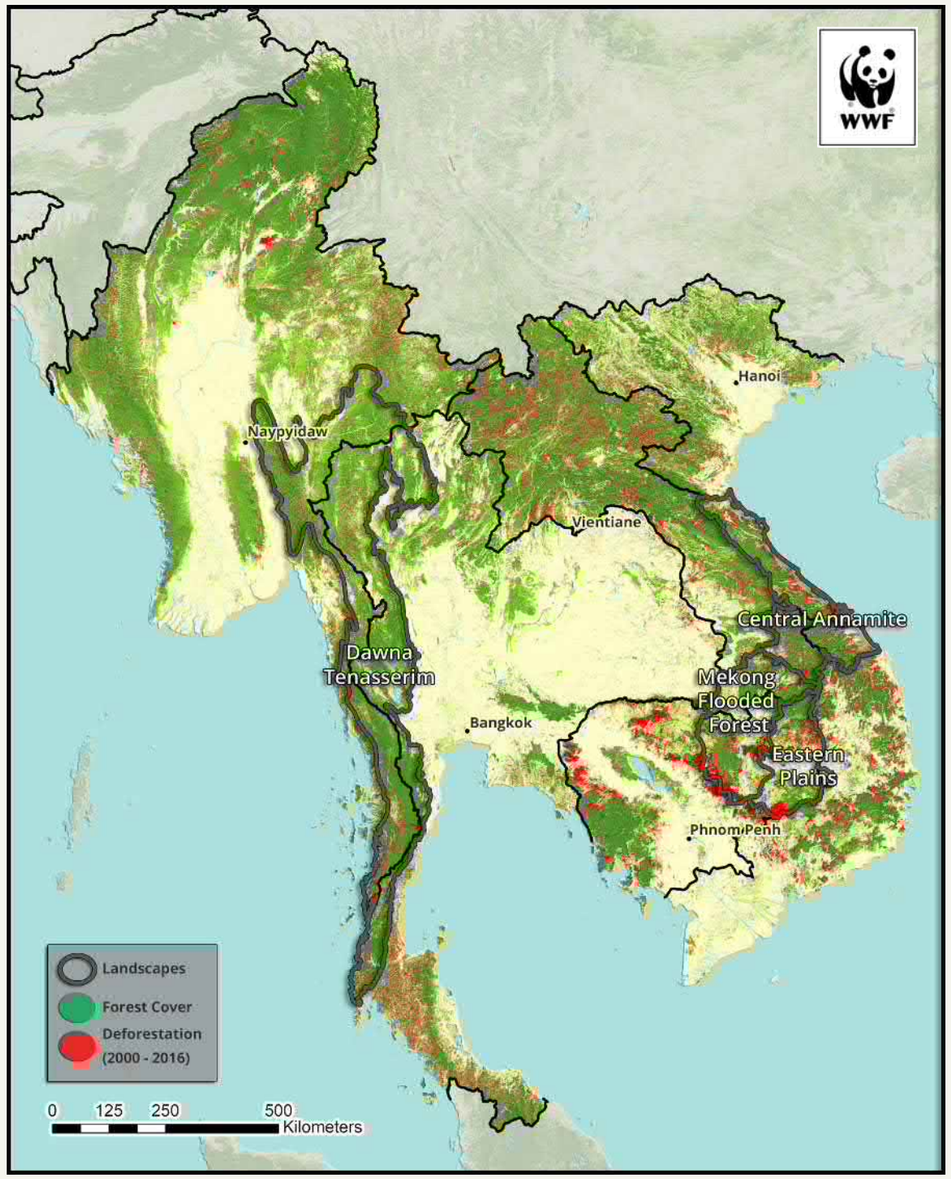
FOOD, WATER, INCOME, AND A SHIELD AGAINST CLIMATE CATASTROPHE

Cambodia's Ream National national park, with its pristine beaches, winding creeks and primary forest trails, is far more than a source of tourism income. Tens of thousands of villagers living in or near the park depend on it for other ecosystem services. They gather wood there for fire and wild plants for medicine, food and handicrafts.[9]

These and other forest products, freely available to villagers, are valued at about $1.2 million per year, or roughly $220 per household annually.[10] For rural families subsisting off the land, that amounts to a significant share of their income. Communities like this, who depend directly on forests across the region, know all too well that they are invaluable assets.



GREATER MEKONG DEFORESTATION: 2000-2016



Deforestation in the Greater Mekong region between 2000 and 2016, with WWF's priority landscapes highlighted. Source: WWF analysis based on Hansen/UMD/Google/USGS/NASA.

CURRENT FOREST STATUS BY COUNTRY

LAOS

FORESTED AREA: 13,369,408 ha (58%)

FOREST COVER CHANGE TREND: Decrease, -0.4%/year (2005-2015)

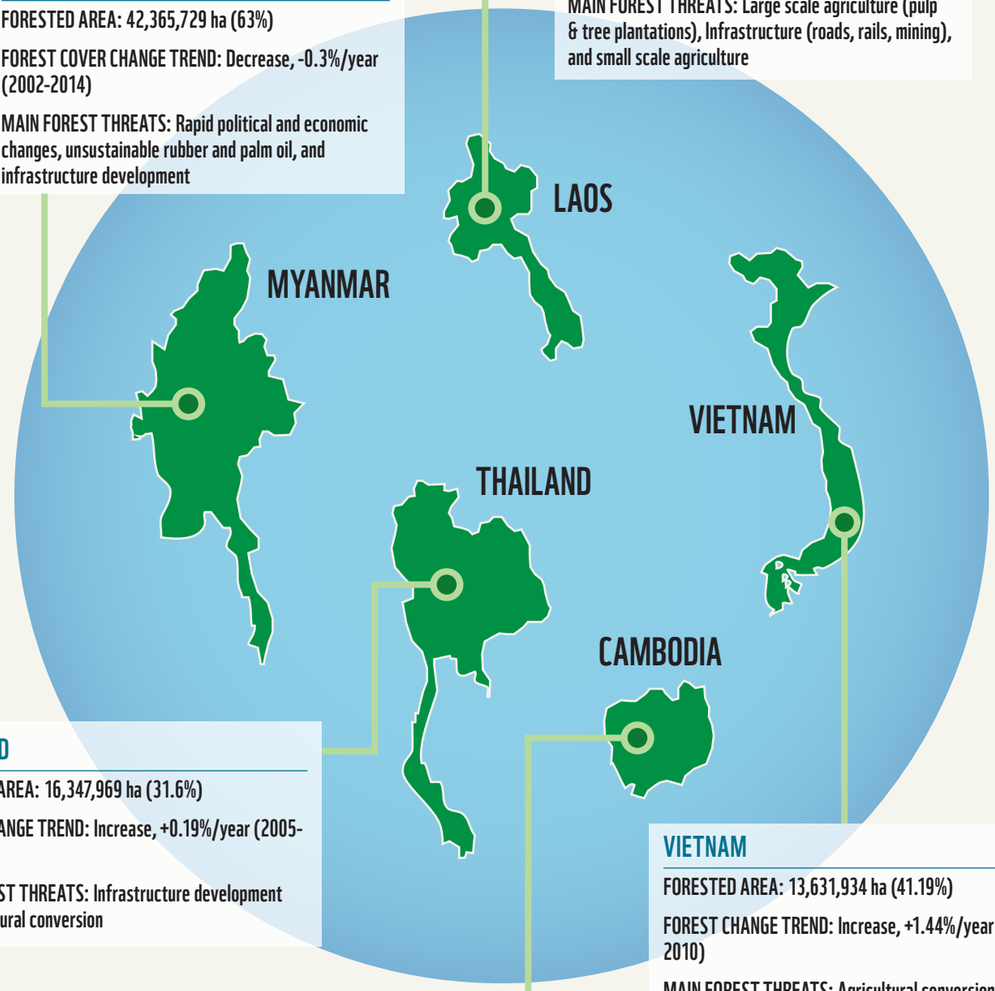
MAIN FOREST THREATS: Large scale agriculture (pulp & tree plantations), Infrastructure (roads, rails, mining), and small scale agriculture

MYANMAR

FORESTED AREA: 42,365,729 ha (63%)

FOREST COVER CHANGE TREND: Decrease, -0.3%/year (2002-2014)

MAIN FOREST THREATS: Rapid political and economic changes, unsustainable rubber and palm oil, and infrastructure development



THAILAND

FORESTED AREA: 16,347,969 ha (31.6%)

FOREST CHANGE TREND: Increase, +0.19%/year (2005-2015)

MAIN FOREST THREATS: Infrastructure development and agricultural conversion

VIETNAM

FORESTED AREA: 13,631,934 ha (41.19%)

FOREST CHANGE TREND: Increase, +1.44%/year (2000-2010)

MAIN FOREST THREATS: Agricultural conversion, unsustainable logging, infrastructure development, and forest fires

CAMBODIA

FORESTED AREA: 8,518,173 ha (46.9%)

FOREST CHANGE TREND: Decrease, -4.6%/year (2010-2014)

MAIN FOREST THREATS: Large-scale agro-industrial development and lack of effective forest protection policies

SOURCE: Countries' government reports available at Regional Forest Observatory –South East Asia

The forests are sources of cash, food and shelter, but also have deep cultural and religious value. In Myanmar, for example, forests are believed by many to be the homes of certain Nat spirits, who make their presence known by trembling the leaves of the trees where they dwell.[11]

But everyone benefits from the ecosystem services offered by the region's forests. They keep its huge network of waterways clean and healthy, filtering out pollutants, preventing soil erosion, and storing water underground. Millions get their drinking water from rivers and streams that are protected by the Mekong's forests. Fishermen catch over 4.5 million tonnes of fish from the Mekong River every year,[12] which provides people in the region with about 80% of their protein intake.

Forests anchor and hydrate soil and protect it from drying out in the sun. They also help to create cloud cover by releasing vast amounts of moisture into the air. These properties mean forests do a tremendous amount of work in protecting the Greater Mekong from the worst excesses of droughts and floods. According to local conservationists at Cambodia's Tonle Sap lake, wells began to run dry in the hot season in recent years as deforestation in the surrounding region increased.[13] A lack of water does not just mean people go thirsty, it also makes sanitation more difficult and increases the risk of diseases like diarrhea. And it makes life tougher for farmers, who need to irrigate their fields and water their cattle.

Deforestation has also been blamed for making flash floods worse across the region. Without surrounding forests, rivers swell more rapidly during heavy downpours. In hilly areas of Myanmar that have been stripped of their trees, landslides are a frequent hazard, damaging infrastructure and threatening the lives of villagers downhill.[14]

Without trees to regulate large torrents of rainwater and anchor the earth, soil and boulders are easily loosened and washed away. This had tragic consequences in northern Thailand in 2001, when a mudslide in a deforested area buried seven villages, killing more than 120 and leaving over 1,000 people homeless.[15]

The weather extremes causing these catastrophes are set to get worse; the Greater Mekong is one of the world's most at-risk areas to climate change. It is getting warmer and wetter at the same time; rainy seasons will keep getting shorter but more intense, and hot seasons will continue to get longer and harsher.[16] As the threat of climate change looms larger, forests have a key role to play in saving lives, shielding against economic catastrophe and removing greenhouse gases from the atmosphere.

The Greater Mekong is abundant with agricultural produce. To keep crops resilient, especially as rainfall patterns and temperatures change, farmers need genetic relatives of these plants that live in the wild and can be bred with domesticated species to help them resist diseases, pests and droughts.

It is ironic that while agriculture is the biggest cause of deforestation in the region, these same forests hold a cornucopia of valuable genetic material that the industry will need more and more to sustain itself long-term. Crop wild relatives (wild plants that are closely related to domesticated plants) have already helped ward off pests and diseases that have damaged vast swathes of paddy fields and caused millions of US dollars worth of damage.[17]

As the Global Crop Diversity Trust at the UN's Food and Agriculture Organization puts it: "There is, quite simply, no more important step we can take to prepare for climate change than to ensure that the crops that feed humanity are able to thrive in the new climates that are developing all over the world."

LANDSCAPES THAT SUPPORT:

COMMUNITIES

INDUSTRIES THAT PRESERVE AND VALUE NATURE

WILDLIFE

LANDSCAPES THAT WORK FOR EVERYONE

The role of forests in the fight against climate change shows vividly how these meshes of life are interwoven with our existence, often in ways that are taken for granted. This deep complexity requires recognising the needs of everyone who depends on these ecosystems. WWF believes the best approach here is what is known as the landscape model. This means thinking hard about the needs of all partners while finding ways to farm, produce energy, build roads and support industries that preserve and value the wilderness.

Key to this is ensuring that development projects take place outside areas of critical ecological importance. But it also means reducing impacts as much as possible in areas where development does happen. For example, access roads for mines or dams might be closed after the project is complete to prevent new settlements in the area. Or it could mean constructing wildlife crossings so that roads don't cut off migration routes for wildlife.

THE GREATER MEKONG IS BRIMMING WITH LIFE

The Greater Mekong is one of the world's last major frontiers for new species discovery. Every year, scientists venture into the region's undulating mountain ranges, wade through babbling streams and navigate stifling tropical jungles to find scores of weird and wonderful new animals and plants. Recent discoveries include the Myanmar snub-nosed monkey, which according to locals in the country's mountainous north is prone to sneezing when it rains because water gets into its upturned nostrils. To solve this problem, the monkeys are said to sit with their heads between their knees during downpours.

Then there are various new species of carnivorous pitcher plants that grow up to several metres high and can lure mice, lizards and even birds into their bell-shaped traps to be drowned in nectar and dissolved with digestive fluids. There are also bats with wooly heads and horseshoe faces. New frogs are discovered here too, including one discovered while perched on a boulder in the limestone karst forests of Vietnam and another one that glides between trees. There are giant flying squirrels, tiny green warbler birds, fish with fangs and fish with genitals on their heads. All told, the region is home to over 430 species of mammal, 800 species of reptile and amphibian, 1,200 bird species, 1,100 fish species and 20,000 species of plant.

And of course, the region's forests are where some of the planet's most well-known and cherished animals roam. Between 7,000 and 10,000 Asian elephants span a combined area of 300,000 square kilometres, requiring vast ranges to migrate and feed on hundreds of pounds of plant matter per day, including grass, fruits, leaves and vegetables. The Mekong's tigers are found across an even greater area of more than half a million square kilometres, but their numbers have dwindled from 1,200 in 1998 to around 200 today. Both animals are enduring significant threats due to loss of their habitats and the fragmentation of forests, which cuts off their migration routes, makes it harder to roam for food and to mate, and gives poachers easier access to once remote areas to hunt them.

"It's vitally important that we better understand the patterns of biodiversity in the region so that we can better identify priority areas for conservation. This little frog is just the latest piece in the biodiversity puzzle of the region, but its discovery will hopefully help inform biodiversity management in the area."

-Dr. Jodi Rowley, the scientist who described the Orange Eyed Litter Frog (above) for the first time in Cambodia in 2015.

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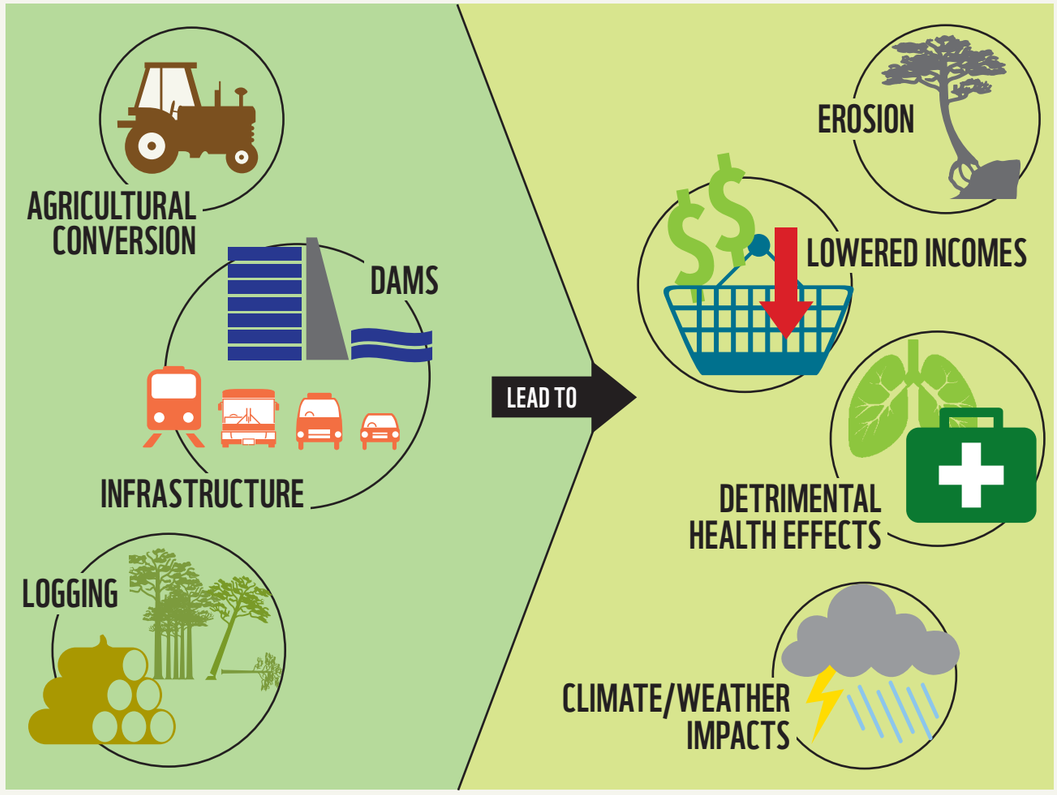
WHAT HAPPENS WHEN FORESTS ARE DEGRADED?



THE RUSH FOR SHORT-TERM WEALTH THREATENS LONG-TERM GROWTH

Much of the Greater Mekong Region is in the midst of an economic boom. Recent decades have seen countries ravaged by war and isolation begin to open up to the global economy. Large numbers of people from mostly rural populations have migrated to urban centres, where cranes swing and tall buildings dot previously flat skylines.

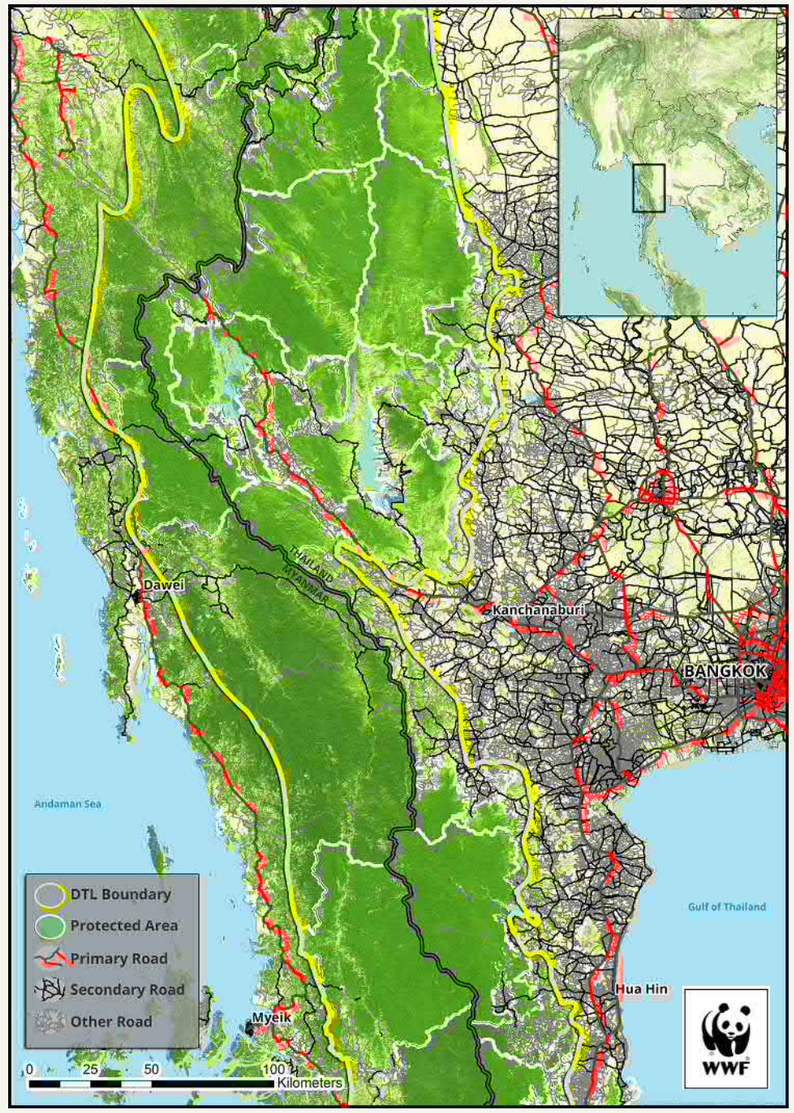
This flurry of economic activity presents a complex task for the region, which will need to balance the legitimate development needs of its nations against the long-term need to preserve the vital ecosystem services provided by forests. The largest drivers of forest loss in the region are crop plantations and agriculture. Enormous swathes of canopy are being cleared to plant sugar cane, rubber trees, rice paddies and plants for biofuel.

In Myanmar, an area of primary forest more than 17 times bigger than Yangon, the main city, was cleared between 2011 and 2013 for timber and to make way for crop plantations. In Cambodia in 2015, the government granted hundreds of land concessions in forests covering an even larger area of more than 2.1 million hectares. Concessions like this have been turned into sprawling rubber and palm oil plantations, fields for grazing cattle and for growing crops such as cashew nuts and cassava.[19]

The region's economic boom has also spurred a rush to build roads, dams and other infrastructure. These projects in themselves do not require clearing large amounts of forest, but they pave the way for others to do so. And they cause fragmentation, weakening and degrading forests by puncturing holes in the canopy. Research shows that fragmented forests are significantly more vulnerable to further forest loss. Trees that straddle the edges between cleared areas and remaining forests are more likely to die than trees in the middle of forests, research shows.[20] Breaking up intact forests also disrupts the habitats of wild animals, while even small holes in the canopy allow in more light and heat, disrupting temperatures and drying out soil. When new roads are built through forests, it makes access to previously remote areas easier, drawing in people who create new settlements by clearing yet more forest.

Illegal logging for luxury timber is also a widespread and persistent threat, while the felling of trees for firewood and charcoal, and overharvesting of non-timber forest products are also degrading the region's forests.

ROAD CONSTRUCTION IN THE CENTRAL DAWNA TENASSERIM LANDSCAPE
Road construction through forested areas causes fragmentation of wildlife habitat and weakens forest ecosystems, but it also paves the way for illegal activities like poaching and logging to be brought into the forest. Source: WWF analysis based on Hansen/ UMD/Google/USGS/ NASA.



FIGHTING BACK: HOW COMMUNITIES ARE BUCKING THE DEFORESTATION TREND

Years ago, Nguyen Huu Hoa would trek into the woodlands of the Annamite Range Moist Forest Ecoregion and hack away at the towering stems of bamboo and rattan plants with his machete. Taking these plants from this area of Vietnam's Thua Thien Hue province was illegal, and unsustainable harvesting by Hoa and others was degrading the forest across this ecoregion, which covers Cambodia, Laos and Vietnam and is admired for its outstanding biodiversity.

Some of the other "forest intruders", as they're known locally, set snares to catch animals, which Hoa occasionally found dead or dying on his trips. "They were helpless," he said. "I felt sad that I couldn't do anything for them." Eventually, he realised something that would change his life: the forests where he made his livelihood were facing a severe threat, and he wanted to be part of the solution instead of the problem.

Today, he is an award-winning conservationist who leads a team set up with help from WWF that patrols this protected area. He and his team confiscate snares and release countless trapped animals, including the grey-shanked douc, a type of old world monkey that is critically endangered and considered one of the most beautiful primates in the world. They have also freed big-headed turtles, ferret badgers, and a type of goat called a serow.

Across the Greater Mekong, WWF and partners like The Center for People and Forests -- RECOFTC are helping empower communities who live in and depend on forests to protect them. "Local communities have an unparalleled access to knowledge on how to sustainably manage the region's forests, which has been under utilized in past forest management policies," says Dr. David Ganz, RECOFTC Director. "If recent deforestation trends are to be reversed, then initiatives must be implemented that centrally locate these powerful systems of knowledge and action."

While this involves a wide range of initiatives, forest guards are on the front line of these efforts, risking the ire of armed poachers and illegal loggers and braving sometimes treacherous weather.

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UNSUNG HEROES KEEP OUT POACHERS AND LOGGERS

In Cambodia's Srepok Wildlife Sanctuary, WWF - along with partners RECOFTC, My Village and NTFP-EP - has helped set up 19 zones known as Community Protected Areas (CPAs). Around 300 families in each community, 60% of all residents, are involved in the project in some way, a clear sign that there is widespread popular support for protecting forests. For the forest guards, this means covering thousands of kilometres on foot, or by motorbike, car or boat. They camp in the wilderness for days or sometimes weeks at a time and seize chainsaws, timber, live animals and reams of metal wire used for traps.

During one 4-month period in 2017, 65 guards across the region set up dozens of checkpoints and seized more than 100 snares, 51 logs and seven cubic metres of timber. They also rescued eight live animals from poachers, including four water monitor lizards, destroyed 20 illegal camps and helped convict one offender. In the same year, a different team at the Phnom Prich Wildlife Sanctuary escaped unscathed after being threatened with AK47 machine guns by two poachers. The CPA program supports these brave community rangers with gear including cameras, GPS devices, walkie-talkies, hammocks and raincoats.

During one 4-month period in 2017, 65 guards in Srepok Wildlife Sanctuary set up dozens of checkpoints and seized more than 100 snares, 51 logs and seven cubic metres of timber, and rescued eight live animals from poachers.

The scale of illegal activity in the Greater Mekong's forests is vast, so projects like this must be expanded across the region to meet the challenge at hand. Supporting people to work on the frontlines as forest guards is only part of the solution. Giving communities training and support so they can take ownership of the health of their forests is also key. The principle behind the CPAs is that local communities get exclusive rights to use forest resources and in exchange agree to use these resources sustainably, sometimes with training, while managing and patrolling the area.

Members of CPAs covering 9,000 hectares in the Srepok Wildlife Sanctuary can venture into certain areas to pick mushrooms, collect honey from beehives and tap resin from trees. Other areas are marked as conservation zones or reforestation zones, where collecting forest products is off limits and efforts are underway to replant valuable hardwood trees that have been illegally and unsustainably plundered.

Villagers from several CPAs say they soon hope to begin welcoming tourists to the area, in which its elephants, birds, water buffalo and scenic landscapes offer rich potential for ecotourism. If communities can earn decent livelihoods from sustainable tourism, they will have even greater incentives to protect wildlife.

VILLAGERS WHO PROTECT FORESTS EARN BETTER LIVELIHOODS

Another strategy that is yielding promising results across the Greater Mekong is to help communities make decent livelihoods from non-timber forest products in a sustainable way. Rattan, a resource that generates about $4 billion dollars in global trade every year, is an important focus of these efforts. Villagers across the Greater Mekong depend on this plant, a crawler that wraps itself around trees as it grows and is used to make furniture, baskets, house-building materials and handicrafts.

Harvesters trek through dense jungles with machetes to tug these vines down from tangled canopies, strip away their outer layers and hack them free. It is a resource that for many villages accounts for up to 40% of income, but unsustainable harvesting and processing techniques are threatening supplies and degrading and polluting forests.

Unofficial and unorganised groups of harvesters sometimes fell entire trees to bring down rattan vines that they can't reach. And, as Nyguyen Huu Hoa discovered, they also hunt during their trips into the forest, sometimes even setting snares just for fun, with no intention of returning to see if they caught an animal. These groups have also been known to fell trees for timber, and set forest fires to drive animals into corridors where they can be hunted more easily.

Even producers who don't hunt animals or burn and fell trees when they harvest often use toxic chemicals, pesticides, glue, petrol and bleaches while processing and finishing the material. This pollutes soil, air and water sources and also threatens people's health. These techniques also result in lower quality finished products.

At WWF's sustainable rattan project sites, in partnership with IKEA, these practices are changing. "People didn't know much about harvesting rattan before the project started. They often went into the forest and cut down everything they saw," said Roth Hem, of Prek Thnant village in Cambodia. Now, villagers harvest more carefully, only cutting rattan that has reached a certain length and leaving trees and plants standing.

They also plant and maintain rattan nurseries, using the saplings to replenish naturally growing supplies in the forest to ensure this valuable resource doesn't become scarce. Villagers and project sites receive training and guidance in clean processing techniques, helping to improve incomes and reduce pollution at the same time.

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WWF helps these communities certify their rattan products with the Forest Stewardship Council, a process that requires clearing technical and bureaucratic hurdles. The FSC stamp means smallholders can command higher prices for their products, which are in demand in Switzerland.

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RESPONSIBLE FORESTRY MEANS ACCESS TO GLOBAL MARKETS

"Securing ways to enhance the livelihoods of local communities is an important step towards managing forests in an equitable fashion. In our globalized world, this includes first establishing a productive dialogue amongst both private sector actors and local communities, as shown in WWF's and RECOFTC's recent initiatives."

-Dr. David Ganz, RECOFTC Director

WWF's on-the-ground work with smallholders shows that good business practices can protect forests and help economies grow at the same time. This is a powerful lesson, upending the narrative that developing economies must sacrifice their natural habitats to drive growth.

WWF-supported projects and local partners are helping communities significantly boost their incomes from products like rattan, acacia, rubber and bamboo while scaling up efforts to prevent unsustainable logging and hunting. At the same time, they have nurtured robust, forest-friendly and profitable local industries, creating success stories that can be used to convince others of the enormous benefits of saving natural forests.

This means starting at the local level to convince those who live in and depend on forests of the benefits of a project. Locals in Thaveng village in Laos' Bolikhamxay Province were sceptical when they first heard of an initiative to boost their incomes by weaving rattan.

The project, with support from IKEA, the Swiss Agency for Development and Cooperation (SDC) and the Swedish International Development Cooperation Agency (Sida), aimed to train members to make high quality, FSC-certified furniture that would give them access to global markets.

Today, rattan growing and weaving has made the villagers less reliant on unpredictable harvests from agriculture and has boosted household incomes. Across the central district of Khamkeut, where Thaveng village is located, 125 households earned an extra $29,000 from rattan in just over a year between 2014 and 2015.
"The project acts like a bridge between us and the market, the outside world," said

Khensy Milatid, a village leader in Thaveng, who has used the extra income to keep his children in school longer.

In 2011, thanks to the project, Bolikhamxay Province became the first region in the world to receive FSC certification for rattan products, with an area of more than 1,100 hectares of natural rattan forest.

In the village of Sobphoun, local chief Linhthing La-Intong said his income has more than tripled since he switched from farming and fishing to rattan production. Chaiy Lathsom, a weaver, has boosted her household income from LAK 20,800, roughly $2.60, per month to the equivalent of about $88 a month. “Securing ways to enhance the livelihoods of local communities is an important step towards managing forests in an equitable fashion,” says Dr. David Ganz, RECOFTC Director. “In our globalized world, this includes first establishing a productive dialogue amongst both private sector actors and local communities, as shown in WWF’s and RECOFTC’s recent initiatives.”

It’s not just incomes that have gone up in Sobphoun. The number of monkeys, deer and wild pigs in the surrounding forests have increased in recent years as conflict between animals and humans has plummeted, La-Intong said.

The project was also set up to ensure the benefits are shared fairly. Villagers in Sobphoun reached a consensus that rattan harvesters would pay 17% of their incomes to community projects and forest management.

In Cambodia’s Koh Kong province, WWF’s Sustainable Bamboo and Rattan Project gives villagers a source of year-round income, meaning they no longer need to leave their villages to work during the rainy season, when there is little harvesting to be done on their plots of land.

Instead of travelling to work on large plantations in urban areas, villagers whittle down sustainably harvested bamboo to make thin rods that are sold to be made into incense sticks. Their Community Forest Management Committee also patrols the forest, collecting snares and maintaining fire lanes to protect from blazes. Locals say the number of snares they encounter in the forest has declined since their patrols began in 2016.

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MYANMAR: A WORLD LEADER IN SUSTAINABLE RUBBER?

Myanmar’s coastal southwestern region of Tanintharyi sits on a strip of lush, hilly land between the Andaman Sea and the Thai border. Its vibrant green forests are teeming with life, including elephants and tigers. But the once unspoiled, sprawling canopy - part of the Dawna Tenasserim Landscape - is undergoing traumatic change. Large plantations scar the landscape, cutting through the historic wildlife migration routes and putting unprecedented strain on the ecosystem.

Much of the land where forests once stood is now lined with neat rows of rubber trees. At night, tappers cut grooves into the bark to release drops of white latex, which flow along vertical channels into halved coconut shells. Sheets of processed rubber hang from racks along the roadside.

The degraded landscape is a worrying sign, but work is underway that aims to transform this trend. Rather than being a country where pristine forests are under constant threat from rubber planters, Myanmar has the potential to become a world leader in sustainable rubber.

© HKUN LAT / WWF-MYANMAR

Global markets are shifting toward deforestation-free rubber as major buyers like Michelin and General Motors pledge to source more sustainably. But right now, not a single country in the world is able to demonstrate that its rubber is produced sustainably. Myanmar could be the first.

To make that happen, WWF has partnered with Tanintharyi's Ministry of Agriculture, Livestock and Irrigation and the local Rubber Planters and Producers Association. The project helps producers to expand "upwards" instead of "outwards" by offering training to increase yields and quality. This will help producers earn higher incomes per acre, removing incentives to expand their plantations into forests, or to start new plantations for non-rubber products.

While India's rubber plantations produce an average of 2,000 kg per hectare, Myanmar's only produce about 650kg per hectare, which often fetches lower prices on global markets because of its poor quality.

The project is already demonstrating to producers the benefits of following a more sustainable path. After just three days of training, yields can increase by up to 20%. Word of the project has spread and other farmers have started asking how they can increase productivity at their own plantations.

WWF has signed Memoranda of Understanding (MoUs) with major rubber producers in the region to set up a deforestation-free supply chain that is 100% traceable by 2022. The project will equip the rubber industry with the tools it needs, such as handheld GPS devices, to prove to global buyers that its rubber is deforestation-free.

"Through the partnership with WWF and our supply chain partners we have been able to make positive shifts in the right direction for responsible forest management. With farmers growing acacia in Vietnam, as they improved their forestry practices--which in turn added value to their products--they received FSC certification that helped verify responsible management and gave them access to the global markets. FSC certification of rattan management in Laos and Indonesia are other examples of how this strategy can create positive shifts. We need to upscale this work to secure the real market transformation."

-Mikhail Tarasov, IKEA Global Forestry Manager

FROM THE VILLAGE TO THE SHOWROOM, SUPPLY CHAINS ARE TRANSFORMING

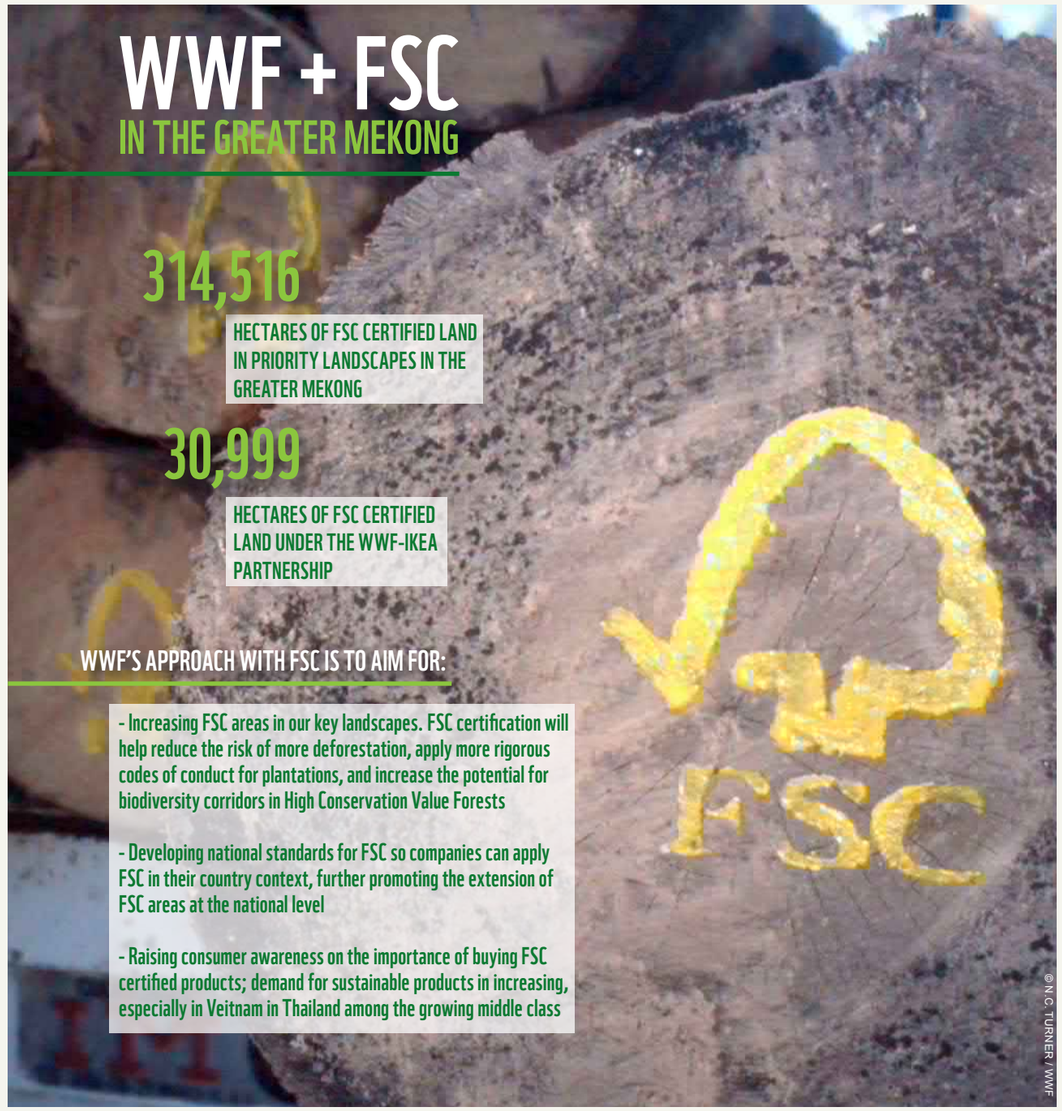
WWF's efforts to help timber producers in Vietnam get FSC certification show the vital importance of working with smallholders. Nearly a quarter of the country's forests are managed by people who own modest stretches of land. But because these landowners often live hand to mouth, they tend to harvest their timber very young so they can cover their short term costs. Young timber is less valuable because it isn't thick enough to be used in furniture and makes for lower quality wood products like pulp and woodchips.

In the Loc Bon commune of Phu Loc district, Mr Ho Da The has more than doubled his gross profit per hectare by harvesting after seven years, instead of five. This pans out as a 67% increase in net profits, enabling him to renew equipment and invest in the next business cycle.

Vietnam's government wants 500,000 hectares of forests to be certified by the FSC by 2020 as part of its efforts to boost the value of timber exports to $8 billion. This is another opportunity to boost local people's livelihoods while incentivising them to produce more sustainable products. FSC certified timber in Vietnam typically earns smallholders between 15-20% more than non-certified wood.

But smallholders need protection from financial risks to convince them to wait longer before felling their trees. A storm or a drop in global timber prices could be financially ruinous if they are relying, for example, on an acacia plantation to mature for seven years before selling.

Because local banks are reluctant to offer loans or insurance against this type of risk, WWF encourages buyers to offer suppliers money up front. And local forest management programs, set up to help smallholders switch to FSC, can also offer financial help if

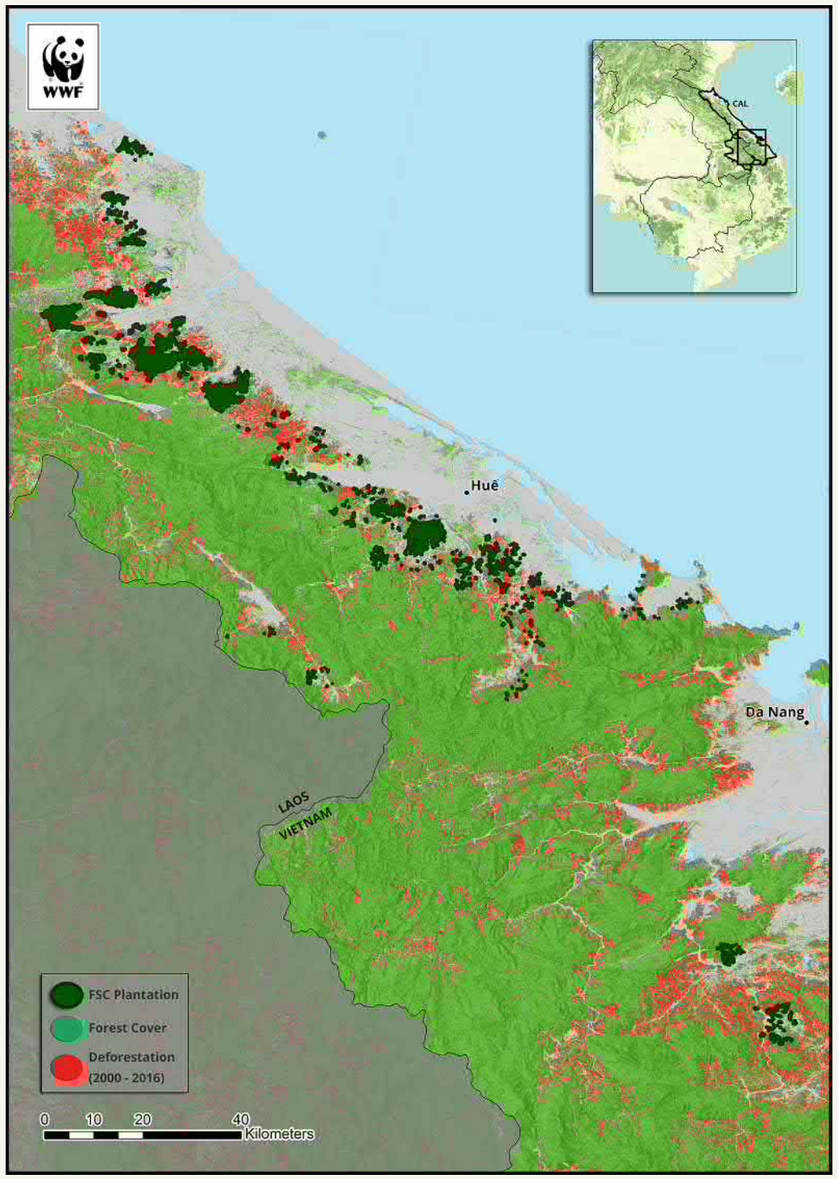


landowners run into trouble. The programs charge a membership fee, and also take a percentage of the extra income that members make from selling FSC-certified wood. WWF also covers the cost of the training needed to switch to more sustainable harvesting and navigate the process of applying for the FSC stamp.

Working with communities to protect forests can ultimately transform global markets. WWF is partnering with businesses along the entire supply chain to create market conditions that reward responsible forestry.

WWF's partnership with IKEA, a major global buyer of timber, has been instrumental in increasing the area of the world's forests that are FSC certified by 35 million hectares. That's an area of forest the size of Germany that is now responsibly managed thanks in large part to this relationship. The partnership help the smallholders and local actors to have today 20,050 ha of planted forest be under FSC labeling .

FSC CERTIFICATION IN THE CENTRAL ANNAMITES



Area of FSC certified plantations in the Central Annamites landscape in Central Vietnam. Source: WWF analysis based on Hansen/UMD/Google/USGS/NASA.

TIMBER GROWERS GO FROM SURVIVAL MODE TO FINANCIAL STABILITY

Because of IKEA's clout in the marketplace, its forestry standards can have a big impact on the way many others do business. This has a knock on effect all the way down the supply chain. It makes it easier to encourage processing companies in timber-producing countries to improve their standards co they can access more lucrative foreign markets.

This means that suppliers like Scansia Pacific tell their own suppliers to only use FSC-certified acacia. In turn, Minh An, a wood-processing company that supplies Scansia Pacific, knows that it must offer incentives to smallholders to get certified.

Minh An's vice director, Nguyen Thi Thi Ha, said his company helps smallholders cover the costs of getting certified, enabling them to charge a higher price for their timber. Minh An benefits by having access to domestic timber suppliers, instead of having to rely on costlier imports. "It's a win-win deal," he said.

FSC certification is a key step on the path toward deforestation-free supply chains. The organization has 10 key rules that forest owners must follow in order to qualify. These include following all applicable laws and treaties, maintaining or enhancing the economic and social wellbeing of workers and communities, and upholding the land rights of indigenous peoples.

Owners are also required to maintain or restore ecosystem services and "avoid, repair or mitigate" damage done to the environment from their activities. This can mean planting native species alongside plantations as buffer zones, avoiding harvesting along riverbanks and banning the burning of felled areas.

Plantations can be a great source of timber that help to take pressure off of natural forests, as long as forests are not cleared to make way for them. But poor practices at plantations can make them less productive while polluting water sources and ruining topsoil.

These poor practices are the norm for smallholders who haven't received training, and who make less money because they have to harvest their timber too soon. But WWF's work is having a transformational effect. "Before, acacia production was just a way for people to survive," said Vu Nguyen, Project Manager for Sustainable Bamboo, Rattan and Acacia at WWF-Vietnam. "Now it's becoming a professional commodity that is market-driven."

BRINGING LANDSCAPES BACK TO LIFE

It is vital that we do everything we can to protect forests that are still standing. But it's also key to restore land that has been deforested or degraded. There are some promising signs in this area.

Forest landscape restoration means more than simply planting trees. It entails a number of different tactics, including helping forests to regenerate naturally, the use of conservation areas, promoting responsible agroforestry and supporting better management of land.

At the Lang Sen Wetland Reserve, an area covering more than 5,000 hectares in Vietnam's Long An province, WWF has partnered with Intel to help restore a landscape that has been degraded by climate change and fluctuations in the rhythm of the Mekong River. Since 2016, hundreds of volunteers from Intel's local offices have planted 19,000 trees, using species that are native to the area.

The reserve supports 9,000 people, providing them with ecosystem services including fresh water and fisheries. It also supports over 400 flora and fauna species and helps regulate water flows, making the region more resilient to drought and floods. Another corporate partner, Tetra Pak, is helping restoration in the reserve, last year planting 4,800 thorny bamboo plants across an area of 6 hectares.

These efforts also aid poorer households by providing non-timber forest products like natural oils, honey, and medicinal herbs while boosting the area's natural beauty, enabling people to offer ecotourism services.

In Laos, the government has committed to a bold initiative to restore the country's forest cover to 70% by 2020, an undertaking that would require planting more than 8 million hectares of forest. However, restoring natural forest in Laos will prove much more difficult so it remains to be seen how effective this effort will be in protecting biodiversity.

PUTTING FORESTS AT THE HEART OF POLICY

When WWF and partners engages local communities and businesses all along the supply chain, it creates success stories that can be shown to policymakers to convince them of the economic benefits of protecting forests. Underpinning this is the concept of the Green Economy, which goes beyond conventional economic thinking to incorporate the value of natural capital.

One powerful example of this is the coastal mangrove forests of the Mekong Delta. These provide protection from floods, and would cost enormous sums to replace with human-built storm barriers. Yet this immensely valuable resource is being squandered as the forests are cut down, often to be replaced with shrimp farms.

WWF is doing pioneering work in the region as part if its efforts to help make Green Economy thinking the new normal. At the request of the government of Myanmar, the world's second most vulnerable country to climate change, WWF conducted the first assessment of the nation's natural capital. This is a very positive first step. "In many countries around the world, we are seeing a renewed appreciation of the importance of nature for the welfare of their citizens. Myanmar has a chance to get things right while so much of its natural capital still remains," said Nirmal Bhagabati, Natural Capital Scientist at WWF-US.

One area where these attempts to influence policy could reap rewards is the Dawei road, a new transport corridor linking Thailand to Myanmar's planned seaport in Dawei that will cut through pristine jungle and slice up wildlife corridors used by tigers and elephants. WWF has been meeting with stakeholders on both sides of the border with the aim of forging a plan that keeps the damage caused by the road to a minimum.

This means recognising the long-term economic benefits of keeping this tract of jungle in the best shape possible. New roads open up pristine jungle to informal and formal development, so there will need to be policies in place to check that. There will need to be wildlife crossings to enable animals to continue to feed, mate and disperse, and special care to leave hillside tree coverage in place to help prevent landslides. It's unclear if decision makers and developers will turn these ideas into reality and pay for them, but the way forward is clear and ignoring them would be a mistake that will prove very costly in the future.

When good policies and laws are adopted, we must ensure they are properly enforced. In Laos, WWF's Illegal Timber Monitoring Study helped the government to act to stop widespread breaches of the law. In 2017, following WWF's study, observers from the Environmental Investigation Agency found that previously busy logging checkpoints at the border with Vietnam had gone quiet. They also found that no newly cut logs at timber stockpiles.

The big picture policies are important, but so are nitty gritty things that affect people everyday, like local taxes. In Laos, WWF held meetings with local and regional officials to help make life easier for rattan producers. The result was a big drop in taxes for struggling harvesters, helping to ensure sustainable production stays financially viable.

HELPING ANIMALS BACK FROM THE BRINK

Without forests, there is no biodiversity. But even intact forests, if left at the mercy of poachers, can become "empty," devoid of large animals that are an integral part of the ecosystem. It is easier to make the case for protecting forests when they teem with life and function properly, so protecting forests and saving the wildlife within them are inextricably linked.

THE NUMBER OF TIGER CUBS IN THAILAND'S MAE WONG NATIONAL PARK HAS DOUBLED SINCE 2014

Even as their habitats face degradation and destruction, there are promising signs for some of the world's most majestic species. In the Greater Mekong, WWF is working with governments to increase wild populations of prestige species, shutting down poachers, defending habitats and even working to reintroduce them to the wild.

In Thailand's Mae Wong national park last year, WWF and the Department of National Parks, Wildlife, and Plant Conservation recorded six new tiger cubs on camera traps. The wildlife survey showed that the number of cubs had doubled since 2014, while the number of adult females has increased 25%.

These victories may seem small and precarious, but they are vitally important; there are just 3,890 wild tigers left in the world, down from 100,000 at the start of the 20th century. Thailand is one of 13 countries where tigers still roam free and Myanmar also has an undetermined number, but as scientists conduct more surveys it may turn out that there is a significant number in their forests. With Laos and Vietnam having very small populations and Cambodia aiming to reintroduce tigers into its Eastern Plains Landscape, it's clear that the Greater Mekong is one of the most important areas in the world for this species.

WWF is supporting Tx2, a global initiative to double wild tiger numbers by 2022, the next "Year of the Tiger" according to the Zodiac Calendar. The Cambodian Government's

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A large-antlered muntjac, one of the most endangered mammals in Southeast Asia, caught on camera trap in Vietnam in 2017

effort to reintroduce tigers is a response to the species being declared functionally extinct in 2016; the last one was recorded on camera trap in 2007. The government's commitment to this is a big win, but there is lots of hard work ahead. WWF is engaging with communities and other stakeholders to train and equip rangers, ensure rigorous protection from poaching and illegal logging and foster thriving prey species.

There are important wins too for the region's elephants. WWF's Kuiburi Wildlife Conservation project in Thailand is testament to the power of a comprehensive approach to elephant conservation. There are hundreds of joint patrols by foot, vehicle and helicopter with assistance from military and border police and with the aid of SMART tracking technology. And at the heart of this approach is the critical need for a healthy forest habitat.

ZERO ELEPHANT POACHING DEATHS IN KUIBURI NATIONAL PARK SINCE 2010

WWF and park staff have engaged with farmers and villagers in the area to encourage them to stop encroachment and poaching in the core area of the park and to promote sustainable use of land. Communities are now engaged as conservation partners and habitats for prey have been improved in key areas. As a result of these efforts, poaching of elephants in the area has plummeted. There have been zero poaching deaths since 2010. Today, around 250 elephants, or 10% of Thailand's wild elephant population, live in the park.

It may not have the same global profile, but the Eld's Deer, with imposing antlers that grow up to a metre long, also benefit from efforts to preserve forest habitat. The provincial government in Savannakhet, Laos, has established a 93,000 hectare sanctuary of broadleaf forest where some 100 members of the endangered Indochinese subspecies roam. WWF has been active in the area since 2008, helping to establish Village Conservation Teams that are in charge of law enforcement and patrolling in the area.

And late in 2017 a monitoring project in Vietnam supported by WWF and others provided new hope for the survival of another critical species facing extinction; the large-antlered muntjac. This is one of the rarest and most threatened species in Southeast Asia, but camera traps found both a male and a female - exciting news for the muntjac's future survival.

In April 2018, following decades of decline that seemed unstoppable, the numbers of Irrawaddy river dolphins in the Mekong region began to rebound. While this iconic creature does not live in the forests per se, the rivers where it feeds and mates flow through a landscape known as the Mekong Flooded Forest, meaning its existence is fundamentally intertwined with that of the forests.

THE HEART OF THE FOREST IS STILL BEATING - IT'S TIME TO ACT

The hard work of saving forests has barely begun, and the situation looks ugly. While it is important not to lose sight of the myriad challenges ahead, it is arguably even more important to learn from the hard-earned progress that has been made so far. The achievements of WWF and others organisations and individuals need to be drastically scaled up as soon as possible.

WWF aims to convince all Greater Mekong countries to put responsible forestry at the heart of supply chains. This is ever more important as the region attracts huge investments. Its populations are among the youngest in the world, and its economies are among the fastest growing. This means there is a huge opportunity for a new generation to prove that prosperity does not have to come at the expense of forests. For this to happen, the development sector, governments and private businesses will need to cooperate on an unprecedented scale.

We need more innovation. How, for example, can communities add value to sustainable forest products? We need clear laws for public-private partnerships, so that both policymakers and businesses know the benefits of joining forces to protect landscapes. And we need to understand the landscape approach better. WWF is mapping areas in immense detail to help draw up development plans that do minimal damage, and to make sure governments and markets have the right incentives to do the right thing. We need to better utilize newly available and affordable technology (e.g. monitoring drones and community-level forest monitoring apps) to better protect, monitor, and manage forests.

By tirelessly advocating for a new approach to economic thinking - one that sees the true value of natural capital - WWF is helping to get as many stakeholders as possible on the same page. The aim is to make everyone understand how forests can make disasters less costly, how villagers become better off when they defend their forests, and how leaving forests intact eliminates the need for costly water treatment plants.

In summary, WWF recommends that for the Greater Mekong to retain its world renowned forests and biodiversity, along with the ecosystem services they provide, we need:

- A recognition from governments, business leaders and the public of the value of forests to clean water, stock carbon, human health and livelihoods and the need to protect them;
- Agreement from government leaders and businesses to put responsible forestry at the heart of their timber supply chains ;
- Businesses to commit and implement zero deforestation supply chain approach
- A demand from consumers and manufacturers for deforestation free products that respect and support community based industries;
- Mapping of High Conservation Value Forests and understanding forest landscapes in order to better plan where agriculture, development and plantations are placed and avoid damaging critical habitat;
- Clear laws for sustainable forestry and public private partnerships;
- More innovation to help stakeholders add value (thus increasing income) to sustainable forest products;
- To re-wild the forest by securing biodiversity corridors between protected areas.

Everyone with a stake in the region's forests has a role to play. If enough people seize that opportunity, they can be part of a future where the countries they live in have vibrant, world-leading, green economies.

"We shouldn't wait around for others to act," said Thibault Ledecq, Regional Forest Coordinator for WWF's Greater Mekong Programme. "The future of the Mekong's forests is in all of our hands."

Perhaps it is best summed up by someone closest to the forest floor, like Nguyen Huu Hoa, the former "forest invader" turned "forest and wildlife protector:"

"The animals I rescue from poachers' snares can only survive if their forest home is left intact. I am committed to protecting these creatures and the places they live. Forests are the lifeblood of Vietnam and the entire world and I hope others will join me in this quest for our future."

TOGETHER POSSIBLE

WWF's forest work in the Greater Mekong wouldn't be possible without the WWF network and the organizations and private sector that believe in working together

NGOs & INSTITUTIONS

- AAGE V. JENSEN CHARITY FOUNDATION
- BEVAN JONES
- BIRDLIFE
- CIRAD
- CONSERVATION INTERNATIONAL
- FAUNA & FLORA INTERNATIONAL
- GLOBAL WILDLIFE CONSERVATION
- HELMSEY FOUNDATION
- INBAR
- IUCN
- LAO BIODIVERSITY ASSOCIATION
- MERN
- NGO FORUM
- NTFP EXCHANGE PROGRAMME ASIA
- PAN-NATURE
- RECOFTC
- SEUB FOUNDATION
- THE NATURE CONSERVANCY
- VILLAGE FOCUS INTERNATIONAL
- WCS

MULTILATERAL GOV'T AGENCIES/FUNDS

- ADB - ASIAN DEVELOPMENT BANK
- BMU - GERMANY
- BMZ - GERMANY
- DANISH INTERNATIONAL DEVELOMENT AGENCY
- DARWIN INITIATIVE
- DEZA/SDC SWISS AGENCY FOR DEVELOPMENT AND COOPERATION
- DGD - BELGIAN DEVELOPMENT COOPERATION
- EUROPEAN UNION
- FEDERAL MINISTRY FOR FOOD & AGRICULTURE - GERMANY
- FINLAND MINISTRY FOR FOREIGN AFFAIRS
- GLOBAL ENVIRONMENT FACILITY
- GREEN CLIMATE FUND
- KFW - GERMANY
- SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
- UNITED NATIONS DEVELOPMENT PROGRAMME
- UNITED NATIONS ENVIRONMENT PROGRAMME
- UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

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PRIVATE SECTOR

- AVERY DENISSON CORPORATION
- FOREXCO QUANG NAM
- H&M
- HOANG HUNG COMPANY LIMITED
- IKEA
- ITTO
- MICHELIN
- NAM DINH FOREST PRODUCT JOINT STOCK COMPANY
- NGHIA TUN (MSC)
- QUOC THANG JOINT STOCK COMPANY
- SCANSIA PACIFIC
- STORA ENSO LAOS
- TETRA PAK
- THANG LOI ENTERPRISE
- THANH HOA COMPANY
- THUY SON INVESTMENT JOINT STOCK COMPANY
- TRUONG THANH COMPANY
- VINH LONG TRADING MANUFACTURER JOINT STOCK

REFERENCES:

1. Forest and Agriculture Organization: Global Forest Resources Assessment 2015.
2. https://www.worldwildlife.org/threats/deforestation [LA = 130,000 hectares/502 square miles](18.7 million acres = 7.5 million hectares]
3. http://www.fao.org/docrep/010/a1598e/a1598e10.htm
4. The Nature Conservancy: Natural Climate Solutions
5. https://www.eea.europa.eu/highlights/forests-can-help-prevent-floods
6. http://wwf.panda.org/wwf_news/?uNewsID=191323
7. https://www.sciencedirect.com/science/article/pii/S0378112715003370
8. WWF, Living Forests Report http://wwf.panda.org/our_work/forests/forest_publications_news_and_reports/living_forests_report/
9. https://www.cbd.int/financial/values/cambodia-valueream.pdf
10. http://mekongarcc.net/blog/employing-ecosystems-service-valuation-guidelines-solve-metaphysical-riddles-and-make-case-cons
11. http://www.green-lotus.org/buddhism-and-animism-in-myanmar-why-ecology-matters-for-religion-and-beliefs/
12. https://www.conservation.org/where/Pages/Greater-Mekong-region.aspx
13. http://sea-globe.com/deforestation-drought-cambodia/
14. https://www.illegal-logging.info/content/deforestation-causing-landslides-says-expert
15. https://www.wsws.org/en/articles/2001/09/thai-s04.html
16. https://wwf.fi/mediabank/1059.pdf
17. https://www.usaid.gov/sites/default/files/documents/1861/USAID%20mekong_arcc_theme_report_-_ntfps_and_cwrs-press.pdf
18. WWF Living Forests Report http://wwf.panda.org/our_work/forests/forest_publications_news_and_reports/living_forests_report/
19. http://www.leafasia.org/sites/default/files/public/resources/Cambodia%20Final-Revised-Nov2015.pdf
20. https://news.mongabay.com/2018/02/tropical-forest-fragmentation-nears-critical-point-study-finds/

WWF

Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony and nature.

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